

Massachusetts Biofuels Task Force
January 17, 2008 Public Hearing
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Thank you for opportunity to speak on behalf of Verenium Corporation. Headquartered here in East Cambridge, we are one of the nation's leading cellulosic ethanol technology developers. We are currently nearing completion of the first true demonstration-scale cellulosic ethanol production facility in the nation, located in southwestern Louisiana, which is designed to produce at least 1.5 million gallons of ethanol per year. We are also actively developing sites for commercial-scale facilities throughout the Gulf Coast region of the United States including Louisiana, Florida and Texas. We have also licensed our technology overseas in East Asia where it has been used in facilities that are already complete or under construction in Japan and Thailand.

Massachusetts is not among the states in which we are actively pursuing project development at this time. Nevertheless, we take a keen interest in the proposed Massachusetts biofuels law, both because it would shape the market for ethanol use in an important consuming state, and because Massachusetts is often a policy trendsetter with the potential to influence state policies on ethanol use nationwide. The excise tax exemption for low-carbon cellulosic ethanol is an effective and straightforward incentive mechanism, the first proposal of its kind, and we strongly support its adoption.

Let me first address the role of safeguards on ethanol efficiency and carbon balance in light of continuing questions about the land and carbon footprint of grain ethanol. Grain ethanol has played and continues to play a vital role as a bridge fuel that has established the template for this new industry. But it has become clear that the end game for ethanol production will involve use of feedstocks outside of the food chain. This is the best way to mitigate the growing concerns expressed in the food vs. debate, and to improve the carbon profile of our fuels mix, is to encourage cellulosic ethanol development and deployment. Massachusetts can be confident that the new federal law provides adequate protection in this regard, since it mandates that cellulosic ethanol must achieve a 60% reduction in net carbon emissions compared to the gasoline that it would displace. Several detailed studies have found that, when the technology is mature, carbon reductions of up to 85 or 90% are achievable.

Second, let me address additional recommendations to the Task Force to solve two interrelated problems: the lack of ethanol distribution infrastructure, especially E85 infrastructure, and the small base of flexible fuel vehicles or FFVs capable of using ethanol-rich E85 blends. These two problems create a "chicken or egg" conundrum. Outside of the upper Midwest, few regions of the US have enough E85 distribution to justify strong consumer interest in FFVs, and the base of vehicles capable of using E85 remains small. These factors have retarded market growth for ethanol, even though it has sold at a significant discount to gasoline in recent months.

These problems can be addressed at relatively low cost through state policies. Several regional efforts are underway to develop so-called E85 corridor projects, typically centered on interstate

highways, that would enable users to find the fuel conveniently. The Commonwealth could follow the example of several other states and offer matching grants in the range of \$50,000 per dispenser to help private service station owners, at locations on and adjacent to the Massachusetts Turnpike and other major highways, to make the initial investment in this infrastructure. This is the same model of development used by the cellular telephone industry, which went on to achieve broad market penetration. A network of perhaps one or two dozen such stations statewide, especially if part of a New England initiative, could be decisive in seeding this new infrastructure at modest public cost. State and municipal governments can also play an important role by expanding purchases of FFVs, which cost marginally more than conventional cars (estimated cost increase is \$150), and placing E85 dispensers at fleet refueling stations. Public access 85 dispensers collocated at these fleet stations would leverage the value of the investment.

Third, let me turn to questions about the viability of ethanol production within the Commonwealth. Among the factors that might impede bioenergy production in Massachusetts, I would cite our small size; high land values; the fragmentation of land ownership; and the short growing season of our climate. Nevertheless, we must not rule out the possibility of this industry emerging within our borders. Feedstocks that may emerge as viable candidates for ethanol production include industrial byproducts and waste streams, for example, at pulp and paper facilities; municipal solid waste; and urban green waste. As the technology improve, it may become economic to develop smaller-scale facilities using agricultural residues, woody biomass and other feedstocks. And several nearby regions, including Northern New England, Canada and the Mid-Atlantic, are already viable candidates for the production of cellulosic ethanol that could be transported at relatively low cost into Massachusetts for sale here.

Finally, let me close by reemphasizing the most important reason for encouraging the use of cellulosic ethanol. This is the imperative to reduce the overall carbon footprint of our fuels mix. Several legislative proposals at the federal level to cap carbon emissions are advancing, and there has been some discussion of the merit of taxing carbon, perhaps even shifting from taxation based on income to consumption. While these discussions are at an early stage, they hold great promise for low-carbon biofuels. Any policy framework that puts a monetary value on carbon emissions will be a powerful driver for investment in lower-carbon methods of meeting our fuel needs. The need for a subsidy for cellulosic ethanol is driven in part by what is recognized as a major market failure: our society's underpricing of carbon emissions. As such policies are enacted, I am confident that the market will respond and the need for an explicit subsidy for the use of more environmentally beneficial biofuels will diminish.

Thank you for the opportunity to testify here today and to address any questions you may have.